

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A method for ignoring ground clutter in determining the presence of a missile seeker, comprising the steps of:

projecting an ultrashort laser ~~pulses~~ pulse having a predetermined nanosecond pulse length towards a search area;

detecting returns from the search area with a focal plane array having ~~an~~ a direct-reading focal plane array of photo detectors, each of the photo detectors having a threshold circuit coupled to the output thereof and set high enough to ignore the low-level returns from the terrain illuminated by the laser;

directly and simultaneously reading out each of the photo detectors for direct event detection in a time short enough to obtain a reading from each of the photo detectors before the arrival of the next pulsed return, the time defining a frame;

determining from the readout that there is a return from a missile seeker and the position thereof if there is a signal from a single threshold circuit during the frame and if the signal from the single threshold circuit is not longer than the predetermined nanosecond pulse length, whereby the threshold level limits returns whose amplitude is not indicative of a seeker, and whereby elongated returns from the illuminated terrain are ignored.

2. (Cancel)

3. (Currently amended) The method of Claim-21, wherein the filtering determining step includes providing a NAND gate having one input thereto coupled to the output of the threshold circuit and the other input thereto coupled to a delayed version of the output of the threshold circuit.

4. (Cancel)

5. (Currently amended) The method of Claim-41, wherein compact targets are discriminated from ground returns by ascertaining if during a frame there are only a small predetermined number of outputs from the threshold circuit.

6. (Currently amended) A focal plane array adapted to detect returns from objects illuminated by a pulsed search laser and to discriminate against ground clutter, comprising:

an array of photo detectors, each of said photo detectors coupled to a threshold circuit; and,

a demultiplexing circuit for directly and simultaneously reading out said threshold circuits in a time frame less than the time between returns to said array, whereby the demultiplexer reads out all of the photo detectors in said array ~~virtually~~ simultaneously.

7. (Currently amended) A detector element in a focal plane array used in a laser range finder or LIDAR system that projects a pulse towards a target having a

predetermined nanosecond pulse length, said detector element ignoring ground clutter returns, comprising:

a photo detector;

a threshold circuit coupled to said photo detector; and,

a filter coupled to said threshold circuit for ignoring an output from said photo detector exceeding a said predetermined time duration nanosecond pulse length.

8. (Currently amended) The detector element of Claim 7, wherein said filter includes an RC circuit set to filter out outputs from said threshold circuit that persist longer than a said predetermined nanosecond pulse length time duration.

9. (Cancel)

10. (Original) The detector element of Claim 7, wherein said filter includes a NAND gate having one input thereto coupled to the output of said threshold circuit and a delay circuit coupled between the output of said threshold circuit and the other of the inputs to said NAND gate.

11. (Original) The detector element of Claim 10, wherein said delay circuit delays the output of said threshold detector in the nanosecond range.

12. (Currently amended) A focal ~~point~~ plane array architecture for use with a pulsed laser having predetermined nanosecond pulse lengths, comprising:

a photon detector and a threshold circuit for each pixel of said array for increasing the feasibility of photon counting at infrared wavelengths;

an ultra fast frame readout for said array utilizing direct simultaneous pixel readout;

means coupled to said frame readout for inherent discrimination of compact targets by ignoring ground returns, said inherent discrimination means including a filter for ignoring returns that persist beyond said predetermined nanosecond pulse length; and,

means coupled to said means for inherent discrimination for programmable range gating ~~by exterior selection of array events within an expected return time for a transmitted pulse.~~